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THE

# LARYNGOSCOPE.

VOL. I. ST. LOUIS, MO., DECEMBER, 1896. No. 6.

## ORIGINAL COMMUNICATIONS.

### AN ESSAY ON THE ORGANS OF TASTE.*

AN ORIGINAL MONOGRAPH.

Presented to the French Laryngological Society, of Paris.

BY J. MOUNT BLEYER, M.D., F.R.A.M.S., OF NEW YORK CITY.

"Each has its power distinctly and alone,
And every sense's power is its own."
—*Lucret*, iv., *487*.

"*De gustibus non est disputandum*" is an old and well-known commonplace, to which, while prefixing it as motto, I might give a rendering somewhat different from the usual one, and say, about taste there is little to be said. No doubt, upon such a theme many pages might easily be filled, were I minded to enter the arena of æsthetics and pursue the chameleon-like idea into all its ramifications; but a sober exposition of the physiological conditions of the sense is so unpromising a subject that I could not help fearing an exposure of the poverty of science, as in my consideration of the sense of smell.† I

*This Monograph is a companion to the one, "A Memoir on the Odoriferous Sense," by the author. Presented to the same Society in May, 1896.

†"Memoir on The Odoriferous Sense." Dr. J. Mount Bleyer, of New York City, Transaction French Laryngological Society, Paris, 1896, and reprinted by the *Homeopathic Throat, Nose Journal*, 1896.

propose rather to clear up some of the inveterate errors prevalent among the uninformed, than to furnish as thorough an investigation as might be desirable. I reckon herein but little on the interest of the gourmands who may suppose that physiology can be advanced by their manifold experience in regard to this favorite sense, and who will, therefore, learn with the deeper indignation that physiology has not only known how to profit by their researches, but even regards them as the chief sources of the common and widespread errors just alluded to. The fleshy and wonderful member which, as such persons would seem to opine, has been placed at the very inlet of the alimentary canal, with scarcely any other view than to preside over gustatory pleasures, offers to our keenest inquiries just as profound an enigma as the organ of smell. Very far are we from being able to explain how that specific sensation, which, without any further power of description, we denominate taste, arises; what is the essential difference between a sensation of sweet and sour; what the real principle which resides in any substance so as to occasion our applying to it one or the other epithet, to say nothing of any possible explication, by the aid of science, of the different shadings, as it were, of sapidity cognizable by a nice palate, or of the jargon by which we attempt to characterize them. Here common nerve fibres, between which and those of other organs of sense the closest inspection fails to detect much difference, serve to interpret to the sensorium, by means of their extremities in the mucous coat of the tongue, the endless variety of so-called flavors of sapid substance; but we seek in vain, either at the outer or inner extremities of these conducting fibres, for any specific apparatus which might enlighten us as to their operations. The present state of our knowledge, which the microscope has given us, nevertheless baffles somewhat the physiologist in searching to disclose to him the entire ends of the nerves of taste provided with minute vesicles or filaments, or any other elementary form. Should we understand them any more than we do the already-discovered cells of the cerebral termination of all nerves, or the small bulbs at the outer extremity of the nerves of touch, it would probably fare with us as with some ancient Roman raised from the grave and suddenly placed in presence of a telegraphic apparatus, telephone or electric light.

In the meantime it would seem the next most important problem of science in this connection to study, with more exactness than heretofore, the terminal points of the nerves of taste in the mucous membrane, in order to discover here, as has very recently been effected in the nerves of the other senses, the elementary form of the nerve ends by which the sensation in question is communicated, whereby

we may hope to approach, in the future, somewhat nearer to a solution of the mysterious relation which exists between the contact of sapid substances with the tongue and the peculiar sensations which they are destined to excite.

If we bring into contact with the nerves of sight or of feeling a solution of sugar, or of some intensely bitter substance, such as quinine, they remain undisturbed; neither class of nerves is roused to that state of activity by virtue of which a "*current*" is hurried to the brain, there to call forth an appropriate sensation. We may conclude then with absolute certainty that there is present in the tongue a mechanism, a contrivance which sugar and quinine excite into different specific kinds of action; that this action is suited to evoke in the nerve filaments peculiar modifications of the before-mentioned current; and that this current again must find at the cerebral end of the nerves of taste a special apparatus which so operates upon what we call the soul that, as the final result, a perception of sweetness or bitterness arises. These successive preliminaries to a sensation of taste are at present beyond our scrutiny; it will be well if means are at our disposal to resolve, step by step, with clear physiological facts and indications, the questions which present themselves in connection with each of them. Nor shall we repine that such problems lie before us. The novice errs if he thinks that a science affords to its votaries a higher satisfaction; the greater the completeness with which it presents itself, the more exactly finished the edifice into which it introduces them. A satisfaction of a different and perhaps superior kind is afforded by science through its very gaps and obscure spaces, but only to him who loyally loves it for its own sake; to accompany a science in its development, to contribute, though it were but a small, inconspicuous stone, to the growing structure, affords a more vivid pleasure than being admitted to a participation in what is already accomplished. There are, it is true, self-styled savants to whom also the deficiencies in a science are more welcome than the completed structure, because those deficiences are regarded not in a spirit of earnest inquiry, but as affording opportunities for the acquisition of easy notoriety and applause. Shunning the toils of research, they find it more convenient to guess at the future revelations of science than acknowledge their own ignorance, and overweaving all chasms with flimsy theories, they vaunt the result as knowledge converted into luxury and amusement. With these self-satisfied sciolists, who but too often and easily gain access to the public ear, the detail facts and laws is derided as pedantry; the slow and cautious processes of inquiry as unworthy drudgery; the reserve and modesty of true science as

tame mediocrity or affected obscurity. These remarks are made simply against this form of charlatanism; it is because no occasion seemed more proper than when attempting to place before the general practitioner a comprehensive work of this kind, without dissembling difficulties or courting effect, one of the most obscure departments of physiology, I turn to my subject.

It is not improbable that the first inquiry I have to propose will at the first glance appear to my readers superfluous, and surprise will scarcely fail to be awakened when it is shown how much obscurity really rests upon the seemingly simple question: *What is the seat of taste, and what organs produce the sensation?* With the common and general answer, *the tongue*, unfortunately we cannot rest satisfied, for it remains further to be asked: first, what part of the tongue receives the peculiar impressions which we call taste; secondly, whether, besides the tongue, other parts of the cavity of the mouth are endowed with this faculty; thirdly, to what structural arrangements is it due? Strangely enough the answers to the three questions are still in dispute, and in part at least are extremely defective. It would seem, on the whole, highly probable that to a very small tract has been assigned the sense of taste, for with more exact exploration its boundaries have been found to be more circumscribed. While older physiologists acquiesced in the popular notion that the tongue is the organ of taste, and ascribed to the whole mucous coat of the mouth, and even of the jaws and pharynx, the faculty of exciting impressions of taste, most of the modern school of thought are unanimous in the opinion that only a small portion of the dorsum of the tongue, and that indeed the hindmost and nearest to the throat, exercises the prerogative of deciding on the sapid properties of transmitted substances. It is true that there are those even now who regard the whole surface of the tongue, including its under side and even the mucous membranes which line the orifice of the throat, as embraced within the province of this sense, but in the opinion of many improperly. No one, however, disputes that the hinder part of the dorsum of the tongue is endowed with at least a finer sense of taste; a conclusion which receives countenance from the commonly observed fact that whenever it is proposed to submit any substance to a closer scrutiny of the sense in question, we instinctively transfer it to that portion of the mouth where the hard palate also lends its mechanical aid to the investigation; while it never occurs to any one to test the properties of taste with the point of the tongue, or to introduce the object under the lower surface of that member. If it be difficult to prove conclusively that the rest of the mucous regions under review do not possess a sense of taste, it certainly exists there

in a much weaker and more obtuse degree. The discrimination is not so easily made as might be supposed; in such inquiries there are not a few incidental sources of error. In the first place, care must be taken for trial of this sort, to choose substances which excite a pure and simple sensation of taste, and not simultaneously a sensation of touch, which may readily be confounded with the former. We ought not, for example, to select substances having what is called a sharp, hot, or rough flavor, for those are qualities of a sensation of touch, as are the pungent odors spoken of in my previous article on the sensation of smell.* Now, as the sense of touch is unquestionably spread over the entire cavity of the mouth, it will be granted that such substances as the above may readily lead to false conclusions respecting the extent of the gustatory area. In the second place, it is of importance to the proposed investigation that the substance submitted to proof should not be conveyed through the medium of the saliva, in which it is of course dissolved (for only soluble substances are capable of being tasted), to other regions of the oral cavity, and so be carried to that hinder part of the tongue, whose special susceptibility to such impressions is admitted. Nor for this is any movement of the saliva necessary; as a lump of sugar placed at the bottom of a vessel of water will, in dissolving, gradually diffuse itself through the whole mass and reach the surface, so may the solution of a similar substance introduced beneath the tongue penetrate the salivary stratum which overlies every part of the cavity, and attain the nerves of taste situated elsewhere. If this be the case, it will of course be difficult to determine the exact seat of the sensation. On the other hand, we are always prone to refer the sensation of taste to the point to which, by virtue of the sense of place (Ortssin), we refer the impression of touch produced by the contact of the substance with the ends of the nerves of feeling.

If the proposed inquiry be conducted with scrupulous regard to the precautions indicated, the conclusion, I think, can scarcely fail to be reached that only the hinder surface of the tongue is qualified to communicate sensations of taste. The trial may readily be made by every one for himself. Let a small piece of sugar, for instance, be laid on the end of the outstretched tongue, or, as rubbing will tend greatly to promote the sensation of taste, be rubbed thereon, and no perception of the property of sweetness will ensue. Still more convincing will be the result if an intensely bitter substance be employed. The same negative result is obtained if an experiment be made upon other parts of the cavity of the mouth, and with this view the parts to be examined

* "Memoir on the Odoriferous Sense." Bleyer, 1896.

may be touched with a small and delicate brush dipped in the concentrated solution of a sweet or bitter substance. If, in this way, a little drop of melted sugar be conveyed to the uvula which overhangs the surface of the throat, no taste of sweetness is perceived, provided care is taken, in the first place, that the tongue be not brought by the involuntary retching which is apt to ensue from touching this part, into contact with the uvula; and in the second place, wait not so long that the solution shall have time to be diffused gradually with the saliva to the underlying surface of the tongue. If the solution be rubbed in with the brush, the sweet taste will be more quickly produced; but even then it unquestionably arises, not from the uvula, but from the back of the tongue, and the more quickly because diffusion is promoted by the rubbing. I think, in short, that others propose nothing unreasonable, when we thus showed by these experiments that the circumscribed place of the sense of taste to the small tract of surface to which we are disposed to assign it.

The question next occurs, to what arrangements does this region owe its adaptation as an organ of sense? Were there here an apparatus as distinctly destined for the service of the sense as is found for that of sight in the eye, we should be absolved from the necessity of so nice an investigation respecting the local extent of the sense of taste as that just described. But this is not the case. On the contrary, as there is not known a single peculiarity of the region of the tongue empirically assumed as the province of the sense in question; none at least which can be assigned to it with any such manifest certainty as that with which the dioptrical apparatus of the eye, and the auditory apparatus of the ear, may be assigned to their respective functions. Unfortunately, after a long debate, it is not yet quite agreed to which of the special nerves of sense is appropriated the function of taste. No less than three distinct pairs are directed to the tongue, each a fasciculus of those minute fibres which can be compared to the wires of the telegraph, and each springing right and left from different parts of the brain. These are the lingual branches of the widely distributed fifth pair, the glosso-pharyngeal and the hypo-glossol nerves. It is known that neither by microscopical observation nor from any peculiarity can we conjecture the distinctive operation of such a nerve; just as it is impossible for us to infer whether a conducting wire, when we observe it at any intermediate point, is destined to set in motion the hands of a clock or the index of a telegraph. Anatomical research, however carefully it may explore the divarications of each nerve in the tongue, leads us here to no definite decision; as well because the local boundaries of the sense of taste are not established

beyond doubt, as because many parts are at the same time supplied by more than one nerve, and because, moreover, that nerve which is directed preferably to the hinder part of the dorsum of the tongue, and therefore has the greater probability in its favor, is distributed also to the entrance and neck of the throat surfaces, to which we know the sense of taste is denied. There remains then, only the physiological experiment from which to await a decision, and this also has its difficulties, though less in the realization than the interpretation of its results. It consists in dividing one of the three nerves, and in this manner intercepting all communication between its two extremities in the periphery and the brain; thus, of course, as effectively preventing the transmission of any current by which a sensible image may be formed, as the communication between two telegraphic stations would be intercepted by a rupture of the wires. After the division of either of the three nerves in a living animal, it remains to try whether the latter still possesses the power of tasting, for should it appear that upon the division of any particular nerve the faculty of the tongue to communicate impressions of taste, on being touched with some intensely flavored substance, is wholly lost, we shall be justified in concluding that the nerve on which we have operated was the vehicle of those impressions. But here lies the difficulty—how to verify the absence or presence of this sensation in the animal. The animal wants speech to indicate it, and an impression furnishes us with no direct objective token of its existence. Resort must, therefore, be had to circuitous proceedings, in using which much circumspection is requisite. We should infer the loss of taste if, after the operation, the animal devours, without signs of repugnance, ill-flavored aliments which, in its normal state, were constantly refused. On the other hand, if such substances are rejected we shall be authorized to infer with more certainty the persistence of the sense of taste, when due care has been taken that the nature of the substance is not recalled to the animal by its effects upon some other sense than that which we are investigating. In such an investigation, therefore, we should employ in the trial no substance which, through its characteristic form, is familiar to the animal's eye, and as little one which is readily known by its peculiar smell; nor is a substance to be chosen which, through the medium of the nerves of touch in the tongue, produces a sensation of smarting or roughness, so commonly confounded with impressions of taste. Finally, in this inquiry, discard anything to which the animal is altogether indifferent. Only such articles, therefore, are free from objection and suitable for a decision of the question as those whose properties can be made sensible to the animal

through the sense of taste alone, and none better answers the purpose than a decoction of so bitter and repulsive a substance as colocynth presented in milk. If this mixture be offered to the unwounded dog, allured by the sight of the milk and without suspicion of the foreign substance, he will greedily apply himself to what he supposes to be a well-known dainty; but let a drop once pass the seat of taste and no sign of disgust will be wanting which a dog can manifest.

If, now, one of the three nerves be divided, the glosso-pharyngeal for instance, which chiefly supplies the hinder part of the tongue surface, and find that the dog devours the milk, notwithstanding its bitter ingredient, with accustomed avidity, we may safely infer that the divided nerve was the channel of the sensation of taste, especially when, after a division of the two other nerves, persistent refusal on the part of the animal has testified a perception of the nauseous admixture.

Now, this has been tried with seemingly decisive results: the most careful experiments have uniformly led to the conclusion that the true impressions of taste can only exist when the glosso-pharyngeal nerves are intact; while on the other hand it has been shown with great certainty that the filaments of the hypo-glossal nerve pass to the muscular fibres of the tongue, and by conveying to these the motive current from the seats of the will in the brain, communicate to the organ the power of motion; that, further, the lingual branch of the fifth pair furnishes to the tongue its sensations of touch, thus notifying us of the form, size, weight, softness, or solidity, as well as the temperature, of whatever is introduced into the mouth, and sometimes, too, giving accession to those perceptions of mordacity or roughness which we are apt to confound with the genuine impressions of taste. I shall not here enter into a discussion of the importance of the service rendered by the two last nerves; my good readers will, perhaps, take the trouble of reflecting for themselves upon the manifold disadvantages under which we should lie in the affair of eating and drinking; nay, how impossible in some cases it might prove, if our tongue possessed not the faculty of moving voluntarily in all directions, nor its exquisite delicacy as an instrument for examining the quality of all substances introduced into the mouth. I must also be excused for not attempting to give a detailed anatomical description of the true nerves of taste, as reference can be made to them in all works on anatomy, but give an illustration which will aid you at a glance to search out their course at a glance of the picture. I might,

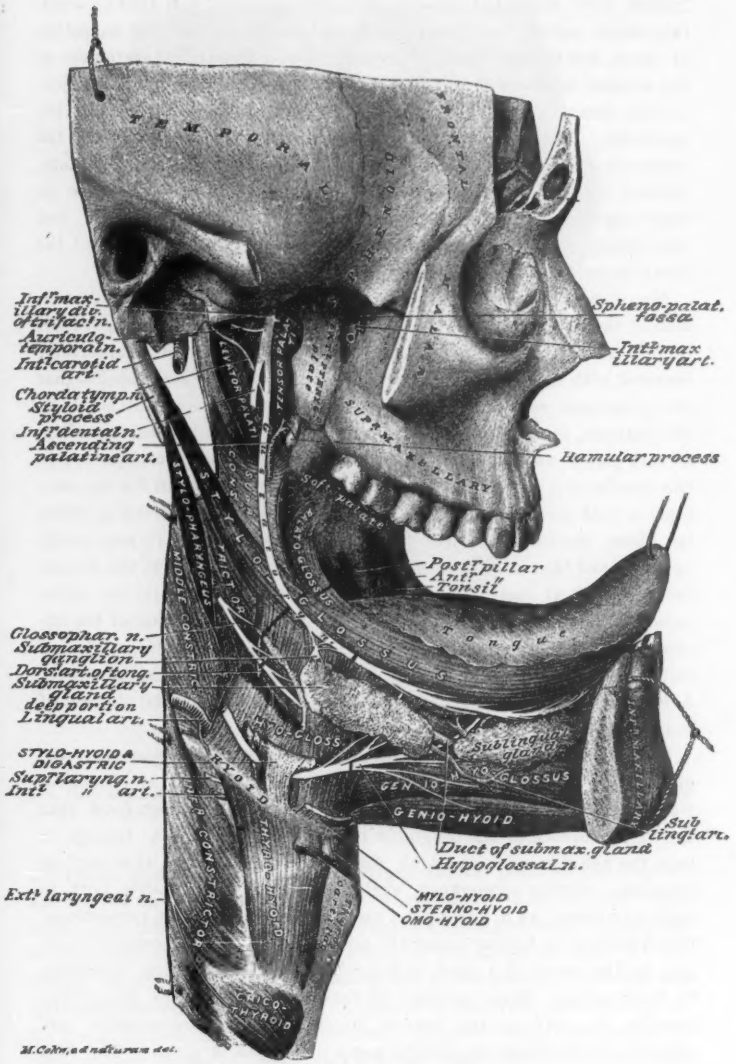
TEMPORAL
Inf.r max-illary div. of trif.ac n.
Auriculo-temporal n.
Int.l carotid art.
Chorda tymp.a
Styloid process
Inf.r dental n.
Ascending palatine art.
Spheno-palat. fossa
Int.l max illary art.
Hamular process
Post.r pillar
Ant.r "
Tonsil
Tongue
Glossopharr. n.
Submaxillary ganglion
Dors.l art. of tong.
Submaxillary gland & deep portion
Lingual art.
STYLO-HYOID & DIGASTRIC
Suppl. aryng. n.
Int.l " art.
Sublingual gland
GENIO-HYOID
Sub ling.l art.
Duct of subm ax. gland
Hypoglossal n.
Ext.l laryngeal n.
MYLO-HYOID
STERNO-HYOID
OMO-HYOID
M. Cohn, ad naturam del.

FIGURE 1.

indeed, have contented myself here, with assuring you that to a certain nerve, called the glosso-pharyngeal nerve, we owe the sensation of taste, but thought best to present to you an explicit statement of the manner in which this fact has been arrived at, because my object in this essay is rather to interest the general practitioner than the specialist. The result of these scientific methods in evincing the glosso-pharyngeal nerve to be the vehicle of the impressions of taste, besides the experiments on animals above described, rests also on some scanty observations made upon man himself; for which, but with extreme rarity, a morbid degeneration or even destruction of the nerve in question has afforded opportunity.

My readers will no doubt willingly dispense with a critical discussion of the dissenting opinions of certain physiologists who regard the lingual branches of the fifth pair as partially, if not exclusively, invested with the functions of taste. The fact above mentioned—that the glosso-pharyngeal nerve, as its name implies, sends filaments to the pharynx, very numerous to posterior epiglottis and anterior surface of soft palate, as well as the tongue—does not furnish an objection to the results obtained by experiments, and affords a ground for the conclusion that the parts of the mucous membrane of the throat in which its fibres terminate possess also the sense of taste. It may easily be conceived that only those fibres of the nerve passing to the tongue are provided at their inner and terminal extremities with the indispensible apparatus (known as taste-bulbs) for the reception of the impressions and their conversion into the sensations of taste, while the rest are simply adapted to the transmission of the sensation of touch. According to W. Krause these taste bulbs follow the distribution of the glosso-pharyngeal nerve.

I shall now point out most of the peculiarities of the gustatory organs. Every one must have observed, either in himself or others, or else in the tongue of the ox when it has been prepared for food, that the upper surface of the tongue is not smooth, but rough; though in man the unevenness is so slight, that to the unaided eye this surface presents a velvety appearance, while in the ox it is so rough, both to sight and touch, as to resemble a rasp. Each of the little projections, which occupy it, appear under the microscope as a very composite organ, on the whole of a quiet, regular form. We distinguish, according to their outline, three varieties of these projections: the *fungiform papillæ*, the *filiform* and *conical papillæ*, and the *circumvallate papillæ*, to all of which the general name of papillæ is given. The first

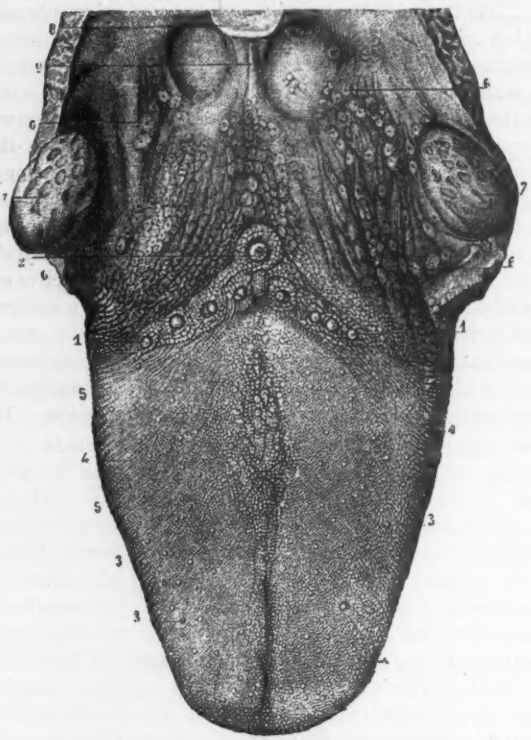

FIGURE 2. Papillary Surface of the Tongue, with the Fauces and Tonsils. (Sappey.)

1, 2, circumvallate papillæ; 3, fungiform papillæ; 4, 5, filiform and conical papillæ; 6, glands and glandular recesses; 7, tonsils; 8, tip of the epiglottis; 9, frænum epiglottidis.

are found especially on the upper surface, on the point of the tongue; the second are distributed over the whole of the member; the third occur only towards its base, where they are arranged upon its surface to the number of from ten to twelve, in the shape of a V. If the tongue be stretched as far as possible out of the mouth, this V and the flattened eminences which form it, placed at intervals and surrounded by a sort of foss, may readily be seen. A more exact description of these three varieties of projections will not, I think, be without interest.

As they are merely elevations of the outer coat of the coat they consist of the same two membranes with that coat, viz.: an outer cov-

ering, called the epithelium, and the proper mucous membrane. The epithelium consists of cells multifariously superposed on one another, the uppermost layers of which become dried into flat and angular little scales, while the lower are moist and roundish. By the use of the tongue the former are continually worn off, and may be observed with the microscope as a constant ingredient of the saliva, which they render turbid; to repair this loss new cells are always forming below. The layers thus constituted are destined undoubtedly to furnish protection to the underlying mucous tissue, which contains the fine and easily-wounded vessels and nerves, just as in the external skin the epidermis, which is similarly composed, serves as a protective covering to the cutis. The accompanying figures, representing a section of the different varieties of papillæ magnified, may serve as the groundwork of a more exact description of each. In figure 3 is represented the section of a filiform; in figure 4 that of a fungiform; and in figure 5 a vertical section from a calve of the circumvallate papillæ. In all of

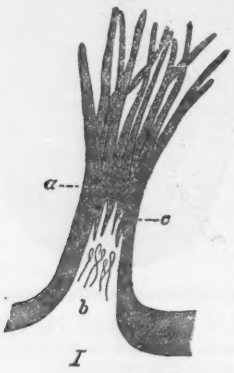


FIGURE 3.

FIGURE 4.

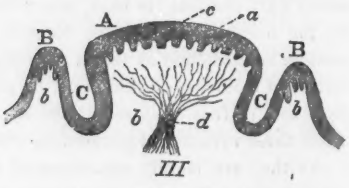


FIGURE 5.

them the part designated *a* represents the epithelium, consisting of squamous and cellular layers; that marked *b* the underlying mucous membrane. It will be seen at first sight that the epithelium in neither form invests the subjacent mucous membrane as a glove does the finger, so that the outer surface of the former shall present an exact impression of that of the latter. In the filiform papillæ it will be observed that the epithelium has a number of long antennæ-like excrescences, giving the papillæ the appearance of a brush, while in the others this covering is extremely smooth, notwithstanding the inequalities of the underlying membrane, *b*, whose surface exhibits in each example a number of successive and rather narrow eminences of a sugar-loaf or conical form. What purpose the antennæ of the first form subserve it is possible to conjecture; but, as regards the regular elevation of the proper mucous membrane, their presence alike in each of the three kinds of papillæ, as well as the circumstance of their existence likewise in the outer skin, leads to the conclusion that wherever they occur, whatever otherwise their diversity, the physiological significance which they bear must be the same. Now as the microscope shows us that, as regards the outer skin and in part the mucous membrane of the tongue, the finest branches of the blood-vessels and the terminal extremities of the nerves of taste, etc., are found in these little eminences, the inference is obvious that this peculiar formation of the surface is imposed on account of the organic contents of the eminences, providing, as it does, suitable receptacles in the periphery for the ends of the vessels, and especially the nerves, and securing their regular distribution over the surface. We may conceive that it behooved that the ends of vessels and nerves should closely approach the outer surface at regular distances from one another, which purpose, indeed, might have been attained had these minute organs penetrated at certain intervals from the mucous membrane into the loose strata of the epithelium; but then they must have wanted a sufficiently stable involucrum to protect them against the pressure and continual wasting of the shifting elements of that covering. Now, such a protection is supplied by the enveloping projections of the mucous membrane which enter into corresponding cavities of the epithelium. I am aware that this teleological mode of considering anatomical arrangements as directed to a predetermined end, and contrived with a view to attaining that end, will at present be received in many quarters with entire repugnance; wherefore I shall not here further insist upon it. Enough if the preceding examples should serve to show how well this manner of viewing the subject is adapted to lead us to an understanding of such arrangements. The clearest method of explaining

natural as well as artificial mechanism is, in my opinion, that which bases itself upon teleological principles; how far the employment of teleology for purpose of demonstration may be justified is another question.

Returning to a consideration of the papillæ, I remark that, for a proper conception of them, attention should be especially directed to the delicate structure of the small secondary projections of the mucous membrane, with a view to seeking therein the ends of the nerves and apparatus of sensation. But hitherto all efforts have been fruitless, nor has research in this direction been rewarded with any degree of certainty. Neither in the filiform, nor fungiform, nor circumvallate papillæ has success attended the attempt to explore the ultimate destination of the nerves which direct their minute filaments with extreme intricacy towards the surface, to follow them into the interior of the superficial projections of the mucous membrane and there detect a difference of arrangements which might guide us to a decision respecting a difference of functions. However probable the supposition that the filiform and fungiform papillæ contain the ends and apparatus of the nerves of touch; that the circumvallate, on the other hand, which occupy the centre of the seat of taste and are outwardly so strikingly distinguished, contain those of the nerves of taste (taste-buds), we are now able to furnish anatomical evidence for that supposition, and indeed to establish conclusively thorough physiological experiments. Even the peculiarity of external form of these latter papillæ is not a riddle; then we cannot exactly explain what purpose is subserved by their division into a roundish central elevation, *a*, and an annular periphery, *b*, separated from one another by a distinct *c*. If we ventured to assert that this foss furnishes a sort of reservoir in which the solutions of sapid objects are received in order, by longer contact with the sensitive surface, to take more full effect on the extremities of the taste-buds or nerves of taste, while the passage of those solutions over free surface might be too rapid for distinct perception, we again advance a conjecture for which much proof can be alleged.

Nothing remains for me to say further, therefore, but to wait until, by persevering and patient observation, some deeper insight into the secret mechanism of the organs in question shall be vouchsafed, and material be thereby furnished for physiological interpretation.

A few more of the most recent and closer studied anotomical and histological facts of what we know upon the gustatory organs will be, no doubt, most acceptable. Quain, Arnstein, Drosch, Gruélin,

Friedrich, Hönig, Schmid, Lenhossek, Niemack and Tuckerman,* all these combined researchers in this branch of study teach us all that I am going to relate regarding the minute new points in connection with these organs. To begin with again, by way of recapitulation partly: The gustatory organs are represented by certain patches, or groups, of peculiarly modified epithelium cells, which are lodged in the thickness of the stratified epithelium of certain parts of the tongue and pharynx. These groups of cells have in mamals a bud-like arrangement, and have, therefore, been termed *taste buds*. They occur in man at the sides of the papillæ vallatæ of the tongue, forming a zone around the papillæ, and also upon the opposed wall of the vallum. They are also found on the fungiform of the papillæ of the back and side of the tongue, extending to the lip, and here and there in the epithelium, covering the general surface of the same parts of the organ. They are especially numerous over a small area just in front of the anterior pillar of the fauces (*fimbria linguæ*). The area usually displays four or five longitudinal folds, or elevations, of the mucous membrane, and appears to represent a much better defined oval laminated structure, which is found in a similar situation in the tongue of some mamals (*e. g.*, rabbit), and which is known as the *papilla foliata* (Figure 6).

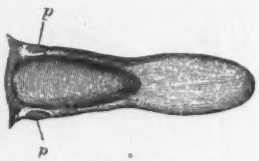


FIGURE 6. View from above of the Rabbit's Tongue Showing the Papillæ Foliatæ. (E. A. S.)

Flask-shaped organs, similar to taste buds, were discovered by Leydig in fishes in certain parts of the skin, and they also occur in the mucous membrane of the mouth and throat in those animals. In amphibia the taste organs take the form of patches of modified epithelium cells, set on the surface of certain *papillæ* of the tongue. The structure of the taste buds is most easily studied in sections of the papilla foliate of the rabbit.

*The entire minute anatomy herein described has been taken from the various authors named. To "Quain's Anatomy" I am much indebted for some descriptions used on the cells of the gustatory organs.—AUTHOR.

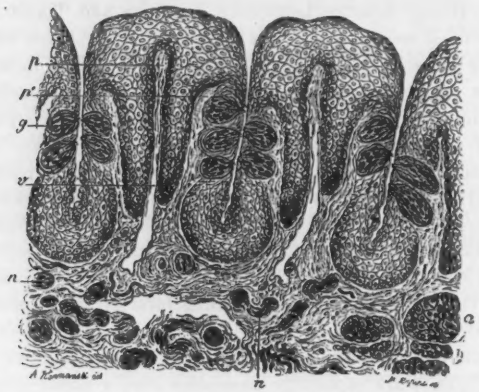


FIGURE 7. Vertical Section of a Foliate Papilla of the Rabbit, Passing Across the Folia. (Ranvier.)

*p*, central lamina of folium; *v*, vein; *p'*, lateral lamina of folium; *g*, taste bud; *n*, sections of nerve-bundles; *a*, serous gland.

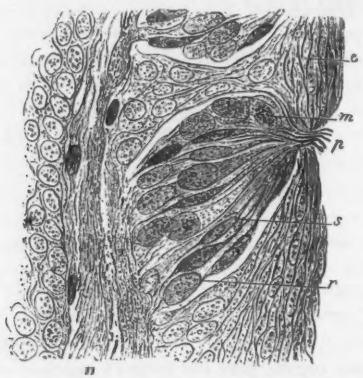


FIGURE 8. Section Through one of the Taste Buds of the Papilla Foliata of the Rabbit. (Ranvier.) Highly magnified.

*p*, gustatory pore; *s*, gustatory cell; *r*, sustentacular cell; *m*, leucocyte containing granules; *e*, superficial epithelium cells; *n*, nerve-fibres..

Taste buds have been compared in general form and appearance to the leaf buds of a plant. They are flask-shaped bodies, the base of the flask resting upon the corium of the mucous membrane, and the apex projecting towards the free surface of the epithelium, and emerging between the ordinary flattened surface cells of the stratified

epithelium. The cells of the stratified epithelium are adapted and applied to the outer surface of the taste bud, and form a sort of adventitious capsule for it. The most superficial cells may even be perforated to allow of the access of the apex of the taste bud to the free surface. In any case the apex does not quite reach the surface, but is approached from the surface by a small opening, the gustatory pore. Into this a bunch of fine hairlets, prolonged from the gustatory cells of the taste bud, is seen to project.

Every taste bud contains two kinds of cells, termed respectively the *sustentacular* and the *gustatory* cells. The *sustentacular cells* (Figure 9, *b*) are long and spindle-shaped, tapering to either end.

FIGURE 9. Cells from Taste Buds of Rabbit. (Engelmann.)

*a*, four gustatory cells; *b*, two gustatory and one sustentacular cell; *c*, three sustentacular cells.

They form a complete envelope to the taste bud, being fitted together like the staves of a barrel; these surface cells are flattened from within out. Other sustentacular cells lie within the taste bud amongst the gustatory cells, extending from apex to base of the taste bud.

The *gustatory cells* closely resemble in general appearance the olfactory cells of Max Schultze. From the nucleated body of the cell, which is somewhat bulged, two processes extend. One, the peripheral, is nearly straight, and passes to the gustatory pore, where it ends in a cilium-like projection, the *taste-hair*. The other process, the central one, passes towards the base of the flask; it may be fine and varicose, and often bifurcated or even further branched, and, according to G. Retzius and Lenhossék, it ends in a free extremity or extremities, and not, as was formerly thought, in continuity with the nerve-fibrils which pass to the taste bud.

Each taste bud receives a small bundle of nerve-fibres, derived, at least in the case of those of the papillæ vallatæ, from the glosso-

pharyngeal nerve. The nerve fibres lose their medullary sheath as they enter the organ and are continued as axis cylinders which end by ramifying amongst the gustatory cells (*intrabullar ramification*) Figure 10), without, as has been just stated, coming into actual continuity with these cells. A number of nerve-fibrils also pass into the enclosing capsule of stratified epithelium and end by ramifying between the cells of that epithelium (peribulbar ramifaction, Figure 10, *p.*). These peribulbar nerves are believed to be nerves of general sensibility and not gustatory.

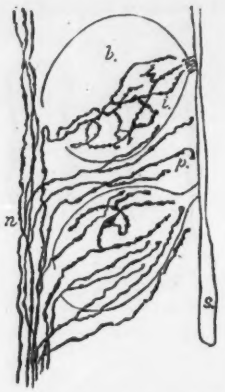


FIGURE 10. Ending of Nerve fibers in and around Taste Buds of Rabbit: Golgi Preparation. (G. Retzius.)

Section of the glosso-pharyngeal nerves in young animals is followed by atrophy of the taste buds after some time. The taste buds of the anterior part of the tongue appear to be supplied by the chorda-tympana nerve.

When a comparison is made of the modes of arrangement of sensory cells and nerve fibres in the different organs of special sense, we find that our knowledge in regard to the gustatory organs is still imperfect. It has usually been supposed hitherto that the central processes of the gustatory cells are prolonged into nerve fibres, and, if this were the case, these cells would come into the same category with the olfactory cells of the nasal mucous membrane. But according to the most recent observations, the central process of the gustatory cell is not continuous with a fibre of the glosso-pharyngeal nerve, and the connection of the gustatory cells with the fibres of that nerve is indirect

and not by continuity. If this is so, the arrangement in the gustatory organ would appear to be somewhat similar to that which obtains in the general integument and in the auditory organ. (Fig. 11).

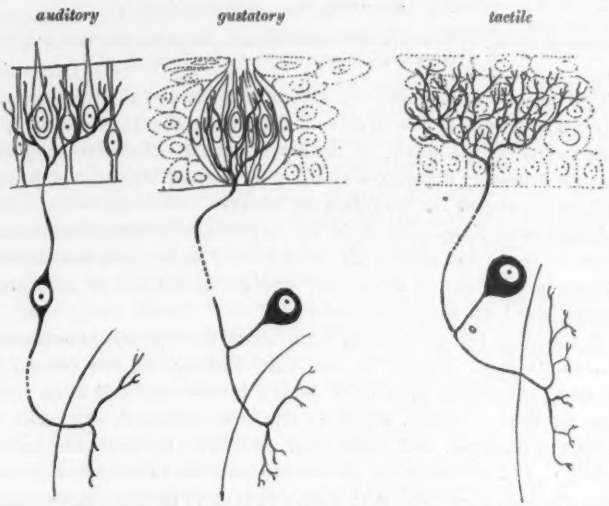


FIGURE 11. Diagram Showing the Mode of Termination of Sensory Nerve Fibers in the Auditory, Gustatory, and Tactile Structures of Vertebrata. (After G. Retzius.)

[CONTINUED IN NEXT NUMBER.]

# SOME AFFECTIONS OF THE MEMBRANA TYMPANI.

BY J. E. SHEPPARD, M.D., BROOKLYN, N. Y.

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That there is frequently considerable difficulty in differentiating between affections of the tympanic membrane and those of the tympanic cavity will, I think, be readily admitted. This fact, together with the necessary differences in the treatment of the two conditions, must be my excuse for the following remarks.

*Simple acute myringitis* is, in my experience, a decidedly rare condition; in fact I find among my records only three cases that deserve a place in this limited class, and whether or not one of these three belongs here I am somewhat doubtful.

Of the other two cases I may summarize the history, appearances, etc., as follows: Cause, in one case bathing, in the other case unknown; symptoms, pain, quite severe, in one case two days, in the other six days; tinnitus, slight in one case, absent in the other; no discharge; deafness, not more than moderate in both; tuning-fork (middle C, 512 vibrations to the second), on the vertex, heard louder in the affected ear in both; B.C. louder than A.C. in both; appearances, quoted from the histories taken at the time; No. 1, posterior-superior quadrant markedly bulged and very red—rest of m. t. only moderately red; No. 2, multilocular bleb occupying the inferior half—upper part reddened and swollen. While observing the membranes the patients inflated the ears by Valsalva's method, when the whole membrane was forced outward. The blebs were then carefully punctured, in both cases followed by the escape of a few drops of clear serous fluid. Valsalva inflation was again done, as before, and while using the diagnostic tube, and absence of perforation clearly demonstrated, showing that the serous fluid was immediately under the outer layer of the membrane. Treatment: in one case, one leech in front of the tragus, and dry heat; in the other, frequent use of the hot douche for 24 hours; both recovered entirely in a short time.

In the third, doubtful, case, the history was as follows: Severe pain and occasional tinnitus for six days; hearing much impaired; tuning-fork, from vertex, louder in the affected ear, but A.C. louder than B.C.; a large plug of cerumen in the canal. After this was removed there was seen a whitish polyp-(pear)-shaped tumor with a broad base, attached to the posterior-inferior quadrant. This was removed with

but little difficulty by the use of a probe, leaving a bleeding surface. The rest of the m. t. was quite red. The middle ear was easily inflated, and there was no perforation of the tympanic membrane. After removal of the cerumen (which had but little to do with the deafness) and this growth, the hearing distance for whispered words increased from fourteen inches up to ten feet. One leech was applied in front of the tragus, a blister over the mastoid, and the case recovered in a few days.

What this little polypoid formation was, I do not know—it was unfortunately lost before a microscopic examination was obtained. I have wondered if it was a localized necrosis of tissue, due possibly to pressure of the cerumen. As indicated above, I have also wondered whether or not it was really a case of acute myringitis. Of this much I am quite sure—the trouble, outside of the cerumen, was limited to the membrane, and there had been symptoms referable to the ear for only six days before I saw the case.

*Myringitis Hemorrhagica*, really a form of acute myringitis, is by no means uncommon, and of this variety I find among my records the histories of a considerable number of cases. In the majority of them it was an accompaniment of otitis externa hemorrhagica.

The most frequent *causes* were grippe, head-cold, lying in a draught, etc.; one case was attributed to getting water in the ear, another to a severe attack of vomiting, which was followed immediately by the ear symptoms. Symptoms: pain, usually characterized as severe, has been present in all but two of my cases; almost as frequent has been tinnitus, either constant and very troublesome, or coming at frequent intervals; in about half the cases there was present, when they were first seen, a slightly bloody serous discharge, due to rupture of the extravasations; the deafness varied greatly in amount, in some being slight, in the majority not more than moderate, and in a few very considerable. Tuning-forks; in all cases heard from the vertex in the affected ear, and as a general rule A.C. louder than B.C. Appearances: on examination with the speculum and mirror, owing to the trouble being in great measure an accompaniment of otitis externa hemorrhagica, blood-blebs, either unruptured or with the fluid escaped or escaping, will be seen on one or more of the canal walls, obscuring entirely a view of the membrane. After puncturing those still needing it, allowing the walls to collapse, and gently wiping out the canal, the extravasations on the membrane become visible. These are not infrequently multiple, two or three often being present, and are of a very dark purplish color. They appear as localized prominences on the membrane, and do not look like a bulging of the whole membrane, as

in middle ear effusion, the dark color being also a differential diagnostic point. However, where the blebs have already ruptured, the difference is at first very difficult to make out between this condition and an acute middle-ear suppuration with perforation of the membrane; as a rule, in myringitis the deafness is not so great, the exact appearance of a perforation is absent, to the practiced eye the depth of the canal is not so great as when the membrane is absent, and, if further evidence is needed, inflation fails to cause a perforation whistle.

Treatment: the extravasations, if unruptured, are punctured at once, great care being taken to go through the external layer of the membrane *only*, leaving the two inner layers intact. As a rule, local bloodletting, with from one to three leeches in front of the tragus, adds greatly to the patient's comfort; in addition to this, the gentle use of the hot douche (as hot as can be borne) about once in three hours for two or three days, keeps the canal cleansed and eases the pain. It was formerly my custom in these cases to blister behind and below the ear, but this I have now about abandoned, having found that the condition rapidly disappears with the measures above described.

*Myringitis Circumscripta.*—Two of my cases seem to deserve this name. One of them was an accompaniment of otitis externa hemorrhagica ; in this case the *symptoms* were constant tinnitus and severe pain for four days, with tenderness in front of, and below, the auricle. Appearances: two hemorrhagic extravasations on the canal walls; near the center of the membrana tympani a circumscribed prominence, light red in color, which on puncturing was found to contain serous fluid which had elevated the outer layer of the membrane. In this case the hearing was very considerably impaired.

The other case was an uncomplicated one—no external ear trouble, no middle ear trouble. Symptoms: for two days pain, felt rather below, than in, the ear; slight deafness ; slight sub-aural tenderness due to a swollen lymphatic gland. Appearances: external auditory canal, normal; membrana tympani, just behind the malleus handle, a distinctly localized, red, tender swelling, which ruptured very easily (while investigating it with a probe), with the escape of two or three drops of serous fluid. Inflation by the Valsalva method pushed outward the membrane, with no evidence whatever of a perforation. After rupture the case recovered almost in twenty-four hours, with the use of nothing but dry heat.

We now come to another, not inconsiderable, class of cases:

*Myringitis Chronica.*—In almost all of my cases I find an interrogation point opposite "Cause" in my history blanks, so that I am

unable to throw any additional light on the etiology of chronic myringitis. Symptoms: in a few cases, occasional moderate pain and inconstant tinnitus, and in all the cases slight, interrupted discharge, usually foul-smelling, and moderate impairment of hearing. Appearances: in all cases pus, in larger or smaller quantities, at the inner end of canal, or as a thin layer over the membrane; after thorough cleansing, some granulation tissue, usually covering only a small portion of the membrane, though occasionally spread over the whole surface.

In two cases a very small polypus was found attached to the short process of the malleus, the remains, in my judgment, of a more extensive myringitic inflammation. Their removal, and mild cauterization of the base, resulted in both cases in a cure within three days.

Treatment of the other cases consisted in the first place of thorough cleansing, either by syringing or by the use of hydrogen peroxide; according as the granulations were large or small, this was followed, *after thorough drying*, by applications respectively of chromic acid or liquor ferri chloridi, or, in a few cases, of nitrate of silver, from 120 to 480 grains to the ounce. Then a thin layer of powdered boric acid was blown over the surface, and as a rule the ears needed no home treatment. After three or four days the patient should return, and, if indicated, the same treatment repeated. After from one to four treatments nearly all of my cases have recovered, the hearing being restored to normal.

Another condition for which the aurist is not infrequently consulted is that caused by traumatism, and which may well be called *myringitis traumatica*. About 90 per cent. of my cases have occurred in women, and have been due to the inevitable hair-pin, with which they have been too vigorously picking the ear. When seen in the other sex, if a hair-pin had not been borrowed from some female member of the family, it was due to a match or tooth-pick. The resulting symptoms are tinnitus and pain, with deafness, in varying degrees, and, in rare cases, slight hemorrhage. With this combination of symptoms the patient often comes in great fright, fearing they may have done the ear irreparable injury. This state of mind should be made use of to impressively warn the patient against the continuance of the bad habit. On examining the ear, distinct evidence of traumatism will usually be seen in some portion of the membrane, and frequently along the canal walls. The best thing to do in the way of treatment is to leave the ear entirely alone, unless the pain be too severe, in which case a leech in front of the tragus, with or without dry heat (hot-water bag), will usually bring the desired relief.

135 Clinton Street.

## NASAL AND AURAL HYGIENE.

BY F. B. EATON, M.D., SAN JOSE, CAL.

(Formerly of Portland, Ore.)

The hygiene of the upper respiratory passages and of their dependent aural apparatus is worthy of more attention than it has received. Its most important feature is, of course, the prevention of coryzas, universally recognized as of constitutional origin—a result of the so-called "pre-catarrhal state," induced notably by confinement indoors and imperfect metabolism, the latter being a sequence of faulty diet.

But the care of the nose and ears as individual members should not be neglected. Let us consider some of the local sources of their derangement.

*Trauma.*—The injuries resulting from falls and blows in childhood are familiar to us as deflected septa, etc., and, naturally, are mostly unavoidable; in later life we learn to guard this tender organ with solicitude. Nevertheless, outside the foot-ball gridiron, who has not at times viewed with sympathetic alarm the rough handling of a ruby-colored nose by its possessor when afflicted with a coryza? At no other time does it need to be treated so gently by its owner, who, scores of times a day, grasps it as he would the handle of a garden rake, and after blowing it with an energy out of proportion to the occasion, finishes by wringing it like a fowl's neck. Hence the persistency of certain coryzas and the lasting nasal congestions set up, subsiding when the over-zealous use of the handkerchief is abandoned.

Patients should be instructed to blow gently *into* the handkerchief, not to grasp the nose and imitate the music of a cornet player.

It is unnecessary, perhaps, to state that the habit of picking the nose is like all habits originally induced by some unhealthy condition, local or general. Yet it *is* a habit after all, and one to be sternly eradicated.

*Dust and Moisture.*—There is much indifference to the evils of dust and very dry air. It seems well nigh impossible to get those thus exposed, especially those working where there are acrid chemical fumes, to wear a mask or inhaler. But like many other things, persistent use renders such apparatus tolerable, and their benefit is eventually appreciated if they are really efficacious. In offices heated by steam

there is commonly much complaint of the irritating dryness of the air —a condition easily remedied, but ignored, and doctors' bills incurred instead.

*Bathing and Diving.*—The oft-repeated warnings to surf-bathers, and particularly to those who dive, to protect their ears from the water by cotton plugs, etc., is not generally heeded, to judge by the damage often traced to its neglect. They who have lost the membrana need to be especially careful, and to give up diving. The tympanum is readily protected by the cotton plugs firmly introduced, but in diving even then the air in the nasal fossæ, accessory sinuses and naso-pharynx is compressed and partially escapes by the Eustachian tubes, and in consequence the water enters so far and high in the nasal fossæ as to painfully irritate the pituitary membrane, and leads to protracted congestion. Such a case has come under the writer's supervision.

*Constitutional Hygiene.*—A depreciated condition of the whole system, most frequently the result of sedentary occupations, is fully recognized as the most prolific cause of nasal and aural catarrh, and as contributing to this we may include tobacco and alcohol. What to do with the victims of the greed for money, who toil in offices no better than a Chinaman's shack, often puzzles the conscientious medical attendant. Better to cease his prescribing and give such patients a tactful lecture on how to live, and particularly how to get some exercise. Ay! there's the rub! Tell your banker patient, who has persistent nasal, gastric and duodenal catarrh, that he must exercise, and a cold, indifferent, bored expression comes upon his face. The word *exercise* is associated in his financial mind with chest-weights, dumb-bells, horizontal bars, stiff muscles and *muscular work*, and he hates to use his muscles. Tell him that "the best thing for the inside of a man is the outside of a horse," and he will reply, "Oh! I don't care for riding." The problem, in short, is to find some form of exercise that will, in the form of a game, such as hand-ball, basket-ball, etc., remind these men of failing powers of self-amusement that they actually were once boys, and gradually lead them on to make use of their neglected muscles. They who should not at first take active muscular exercise, should take it *passively*; *i. e.*, they should be put in a hot room or steam box, or even a thermal bath, a gentle (at first) perspiration induced, and then have a "rub-down" from the attendant, and finally be showered off with cool water. The benefit derived from this, carried out, say three times a week, is very great, and is its own reward.

Y. M. C. A. Building.

# CLINICAL REPORTS.

## DISEASES OF THE MIDDLE-EAR.

### CLINIC BY PROF. POLITZER.

REPORTED BY L. D. BROSE, M.D., PH.D., OF EVANSVILLE, IND.

In our study of diseases of the middle-ear we make two grand divisions: (1) Those diseases of the mucous membrane which run their course without inflammatory manifestation (without reaction), and without perforation of the drum; and (2) those diseases of the mucous membrane where the reaction is distinctly inflammatory in nature, either with or without fever, or with or without perforation of the drum. In the first group we associate middle-ear catarrh: (*a*) serous catarrh, recognized by a serous or slimy exudate within the middle-ear cavity; (*b*) adhesive catarrh, where the drum membrane is directly, or through organized lymph, adherent with the inner tympanic wall; (*c*) sclerosis, which represents a stage between middle-ear disease and labyrinth disease, and is due to a bony proliferation in the labyrinth capsule, causing anchylosis of the stapes. As causes of middle-ear catarrh we recognize acute and chronic naso-pharyngeal inflammation, the acute exanthemata, influenza, syphilis, paralysis of the soft palate, and growths in the upper pharyngeal cavity, which through pressure, impair and destroy the permeability of the Eustachian tube. In serous catarrh the position of the drum may be either normal or bulging, or retracted, and the exudate may or may not be visible. Recognition of an exudate through the tympanic membrane depends upon the amount of fluid present, its position and character, together with the amount of congestion of the middle-ear blood-vessels. Such disease may terminate in recovery through re-absorption of the fluid, with complete restoration of the hearing. The adhesive catarrhs are characterized by the formation of new connective tissue in the mucous membrane lining the middle-ear, which impairs the hearing by interfering with the vibration of the drum or the ossicles. By predilection the new-formed connective tissue occurs oftenest in the

upper middle-ear, over the head of the malleus, and in the fenestra rotunda and ovalis. These adhesive catarrhs may be curable. In the inflammatory middle-ear disease we usually have pain, swelling, rapid exudation of slimy pus, and strong reaction. The drum is red and swollen, and the inflammation reaches its height rapidly and then declines. The re-absorption of an inflammatory exudate on account of the development of numerous blood-vessels may be rapid; whereas in the serous catarrhs, where new blood-vessels do not develop, the re-absorption takes place slowly. In acute inflammatory otitis media simplex we do not have perforation, but the exudate remains a number of days, when it again disappears through re-absorption. In acute media suppurativa we have perforation of the drum as the characteristic symptom, which perforation may or may not again heal. The chronic form of suppurative otitis media lasts a long time, and there may not only be extensive destruction of the drum, but likewise caries and exfoliation of bone, together with adhesions, polypi, cholesteatomata, sinus phlebitis, and brain abscess.

The types of disease we have laid down are not always defined sharply, but run into each other, and an exudate in a simple middle-ear catarrh may lead to suppuration. The patient I now show you, a young man 19 years of age, has had otorrhœa since childhood up to two years ago. The hearing is better since the otorrhœa has been arrested. However the reverse may be true, and such patients may hear better while the ear discharges. The explanation of this is that the moisture kept up by the discharges flowing over the hypertrophic mucous membrane in and around the stapes keeps it relaxed and from shrinking, and thereby interfering with the transmission of sound through the chain of ossicles and the fenestra ovalis. You will notice in this man that the incus-stapes articulation is distinctly visible, while the drum is retracted moreover, more so in some places than in others. When we test his hearing by whispered voice we find he hears distinctly at but two yards. The long perception of the tuning fork is heard longer in the diseased than in the healthy ear—evidence that the auditory nerve is unaffected. We next proceed to inflate the ear by my method, after which, if the membrana tympana is adherent only in places to the inner wall, we will see that it bulges outward everywhere except the points where the adhesions are firm enough to prevent it. He now, you observe, repeats correctly whispered words at from four to five yards. The permanency of the improvement can not now be foretold, and will depend upon whether the simple catarrh still exists. You may heal a suppurating middle-ear inflammation, but if an accompanying catarrh is still active the hearing will not be

restored, and may on the contrary even grow worse. Also changed normal middle-ear tension, through swelling of the Eustachian tube, may, after you have cured an otorrhœa, still defeat restoration of the hearing. At my examination after inflating this patient's ear, I noticed a faintly-reflected yellowish color from within the tympanic cavity—evidence, in my opinion, that we have to do in addition with a catarrhal exudation. We now do a paracentesis, and by combined tubal inflation and aspiration with a Delstance instrument remove a little slimy fluid, with the result you see of further improvement in the patient's hearing. He now correctly hears whispered words at seven yards. Whether the improvement will be permanent or not we will determine at our next meeting.

VIENNA, Oct. 28th, 1896.

# OPERATION FOR MASTOIDITIS, COMPLICATED BY HEMORRHAGE FROM LATERAL SINUS; RECOVERY.

BY CLARENCE R. DUFOUR, PH.D., M.D., WASHINGTON, D. C.

Physician in Charge of Eye Department Eastern Dispensary; Ophthalmologist and Otologist to Sibley Memorial Hospital; Assistant in Eye and Ear Department of Central Dispensary and Emergency Hospital; and Instructor in Ophthalmology and Otology, Georgetown Medical College.

As all cases of mastoiditis complicated by hemorrhage from the lateral sinus, in my opinion, are of interest, I hereby report the following:

J. G., a young lad twelve years of age, was brought to my office by his father, who gave the following history: His son had had "a running from his ear" for about one month, the result of a severe cold; the last few days the discharge had ceased, whereupon the ear began to pain and the mastoid region to swell; the auricle stood out very prominently from the head; the pain in the ear and head was so intense, that for the last two or three nights he could not sleep, but tossed about the bed incessantly. He had been attended by a physician who, when the latter condition did not yield to his treatment, referred him to me.

Upon examination I found a perforation in the post-superior quadrant of the membrana tympani; considerable redness and œdema of mastoid region, which was painful upon pressure; the auricle stood out very prominently from the head; temperature, 100° F. I ordered him put to bed, and hydrogen peroxide instilled into the ear, to be followed by syringing out with a hot solution of boric acid; ice bags were applied over mastoid region. The pain and some of the chemesis subsided, and it seemed that an operation would be avoided.

The improvement continued for several days, when the pain and swelling returned with even more severity than at first. I then informed the father that an operation must be performed at once, as any further delay would be disastrous. He gave his consent, and I had him conveyed to the Sibley Hospital; called in consultation Dr. Burnett, of this city, who agreed with me in regard to the necessity of an immediate operation. After total anesthesia, we made the usual incision, behind the auricle, down to the periosteum, which was removed very carefully, as we expected to find a perforation through

the bone. Upon its removal, we discovered a small opening in the bone above the superior wall of the external meatus, and about three-quarters of an inch behind it. Before any exploration could be made, there was a sudden gush of dark blood through it, which we recognized as from the lateral sinus. As further procedure with the operation was impossible, firm compress of iodoform gauze was put over the perforation, which was held in place by a bandage put on as tight as we deemed best, and the patient put to bed. A nurse was stationed at his bedside, and directed to remain there constantly through the night, to watch that the bandage was not displaced, also to take his temperature every three hours. He was kept very quiet, and a supervision of his temperature maintained for a week, during which time it did not go above 99° F. or fall below normal. On the tenth day the bandage was removed and the operation finished by going into the antrum, partially chiseling away the posterior wall of bony meatus. Considerable pus was found in it; all of the necrosed bone was removed, and free communication established between antrum and external meatus. The wound was closed with sutures, leaving a small opening for drainage. The external meatus was lightly packed with iodoform gauze; a bandage was then put over wound.

He made an uninterrupted recovery. There was no discharge from the ear during it, nor has any appeared since he gained in strength, weight and color, and has had no pain or discomfort at any time since leaving the hospital. He returned home in about one month from the time of first operation.

It is interesting to note that, notwithstanding the amount of pus in the antrum and that there was a discharge of it through the perforation, that none of it found its way into the circulation through the lateral sinus.

It is the opinion of the writer that where there is a perforation found through the bone, especially when in the location of this one, the objective point in the operation should be the antrum, that should be freed from all necrosed material; free drainage through the external meatus should be made, the ossicles removed if found decayed, then the pus tract through the bone should be followed and all necrosed matter removed.

The cause of the hemorrhage, in my opinion, was that there had been a partial erosion of the walls of the lateral sinus, as the pus found its way through the bone; that when the periosteum was removed, the support of the weakened vessel thereby was taken away and the blood forced its way through the eroded walls.

1016 I Street.

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## EDITORIAL.

### COCAINE ACCIDENTS.

The newspapers of Chicago recently devoted considerable space to a case of alleged cocaine poisoning. According to the published reports cocaine was applied to the pharynx, an adherent soft palate was severed from its union with the posterior pharyngeal wall, when the patient's head suddenly drooped, breathing ceased, and the patient was dead.

This happened in a large office building, and in the presence of a dentist who was assisting the operator. Other physicians from adjoin-

ing offices were speedily summoned, and every effort was made to resuscitate the patient, but all measures were futile.

Investigation of the case, and the report of the coroner's physician, who made an autopsy, convinced the jury that death was due to emphysema of the lungs and heart failure.

A few days after this occurrence the writer learned from one of his former assistants, Jas. A. Lydston, that a case of death from cocaine poisoning had occurred in Chicago, but had not been reported.

The writer has seen several instances of prostration; great disturbances of the circulation aad respiration; a quick, forcible pulse, becoming small, rapid and intermitting about every ten beats; the respiration slow and shallow, with a sense of constriction about the chest; the skin cold and clammy; muscular spasms; great efforts at respiration, accompanied with loud moaning and a sense of approaching dissolution.

In addition to these effects of cocaine, one of my assistants, E. Pynchon, informs me of a case in which epileptiform convulsions were induced. W. E. Casselberry reports a case of loss of memory; and Max Thorner had a similar experience, as well as a temporary aphonia. Robt. C. Myles believes that many instances of fainting happen, especially in hot rooms.

Poisonous doses produce rise of temperature, loss of speech and memory, blindness, nausea and vomiting, albuminuria, impaired coordination, hallucinations, delirium, unconsciousness, and convulsions of cerebral origin of a clonic type. In this connection it is interesting to note the action of cocaine on the circulation, as given by A. Haig in his work on "Uric Acid," 1896. He says: "The first effect of cocaine, like that of morphine, is to produce a low tension and quick pulse, due to relaxed arterioles; and the result of this is, on the one hand, improved and quickened circulation in the brain, with mental brilliancy and well-being, and on the other relaxation of the vessels in the kidney, causing a marked diuresis of a pale and watery urine. Later on, just as with opium and other drugs, there comes a rebound. The uric acid held back and cleared out of the blood by the first action of the drug is again got into solution, the arterioles are strongly contracted and the tension high; hence the urine is scanty and of high specific gravity, and the mental condition one of lethargy and depression, with sleepiness, as in all cases of high tension.

These considerations emphasize the necessity of occasionally reminding our readers of the accidents that are happening all around them, and of the means to avoid and meet them, for specialists in diseases of the nose, throat and ear employ cocaine far more extensively than the average pyhsician.

A drug that can produce a tetanoid spasm of the cardiac muscle must not be handled carelessly. Perhaps it would be well to attach the following life-saving label to our cocaine bottles: "Cocaine! Poison! A deadly dose paralyzes the inter-cardiac motor ganglia, the posterior columns of the cord, and the sensory nerves and the respiratory centre ! ! !"

Great precautions may appear superfluous to the very conservative. Indeed, the writer has employed cocaine very extensively ever since it came into use, beginning with a four-per-cent. solution and ending with a twenty-per-cent. strength, and the latter has been employed very largely for a number of years without a serious accident of any kind; but he has incidentally witnessed such distressing and alarming effects as are described above. For this reason he has reduced the strength of his solutions, so as not to apply stronger than the ten-per-cent. preparations, always freshly made, as a proper safeguard.

The absence of any accidents, even while using strong solutions, is probably due to the small quantities employed. Sprays of cocaine were never used in the nose or pharynx. Only the area of membrane operated on was subjected to the action of the anesthetic. If the patient began to grow pale and to sweat, stimulants and an abundance of fresh air were provided. High temperature of the room during cocaine anesthesia is avoided.

J. O. Roe avoids the toxic effects of cocaine by preceding its use with a large dose of digitalis, and whiskey nearly to the point of intoxication. Does the latter *treat*-ment reveal the secret of the overworked condition of our prosperous specialists?

Reclus and Myles adopt the reclining position, and the former insists that with a proper observance of the well-known precautions "there need be no fear of syncope, which is the fault of the administrator and not of the cocaine." He has had 3,500 successful cocainizations, but always insists on the recumbent posture until the patient has partaken of food. This suggests that the French surgeon's office-buffet is not to be eclipsed by the Rochester specialist's sideboard.

It is plainly our duty to advocate the use of the weaker solutions of cocaine. Its absorption from the nose is very rapid. The nose and mouth, like the urethra, require especial care in the application of this drug, for upon those parts it manifests its toxic effects with intense virulency.

The observations of Schleich show that prolonged anesthesia of quite extensive surfaces may be produced by very weak solutions by the intra-cutaneous method, and Reclus always uses no stronger than the one-per-cent. solution by multiple punctures.

It is evident that great care is taken by these successful surgeons to use minimum and accurate doses. Just as exacting carefulness should obtain in the field of the nose and throat specialist. In the case of the ear there is diminished danger, because the mucous membrane of the tympanic cavity is of small area. But the surgeon who sprays strong preparations of cocaine into the nasal and pharyngeal passages makes a mistake for which he may sometime pay a penalty. A cotton pledget dipped in a fresh cocaine solution, pressed until free of any surplus, and placed in contact with the area to be attacked, will produce sufficient anesthesia in ten or fifteen minutes. The patient should always be directed not to swallow any of the solution that may reach his throat, but to spit it out. The horizontal position should be chosen whenever it is practicable. A large dose of digitalis should be given shortly before cocainization, and stimulants in case of toxic symptoms.

In severe cocaine poisoning the writer has seen the symptoms yield to amyl nitrate inhalations, the hypodermic administration of one-twelfth of a grain of strychnine, with nitro-glycerine and ammonia internally, and an enemata of brandy. However, it is better to give the brandy first, and not to use the cocaine at all in cases of hysteria or heart disease. S. S. B.

## CHARCOT-LEYDEN CRYSTALS.

Much interest has recently been awakened by a continuation of the discussion of the etiology of asthma. Enough has been written on asthma and its causation and pathology to fill many volumes; the present evolution seems to incline to the theory of mechanical irritation rather than to a neurological cause.

In the development of the asthmatic condition, says Leyden, there is a transudation of lymph, the result of catarrhal secretion from the bronchi; this lymph accumulates, and, whatever the pathological sequence may be, fibrin and crystals may separate from the "mother lymph" under certain conditions.

It is very questionable, however, whether the peculiar dyspnœa accompanying an asthmatic attack is to be invariably accounted for on the same pathological basis.

One of the oldest theories of asthma is that of spasmodic contraction of the bronchial muscles, in accordance with the supposition that the vagus nerve is connected with the muscle fibers of the bronchi, and that stimulation of this nerve causes the muscle to contract.

Numerous investigators have verified this theory by frequent experiments on the lower animals, and have tested the various phenomena accompanying stimulation of the vagus nerve.

As early as 1870 Leyden discovered a large number of peculiar crystals in the sputum of a young student of theology, suffering from asthma. They were extremely delicate, colorless, and of pointed octahedral form. They varied in size, some being so small as to require a high-power immersion lens for their detection. In the examination of other lung affections, these crystals were never found.

On the strength of the discovery of these crystals, and combining his research with the theories then accepted, Leyden advanced the theory that the sharp-pointed ends of the crystals stimulated the terminations of the vagus nerve in the bronchi; that this led, on the one hand, to cough and the feeling of oppression, and on the other hand to reflex contractions of the bronchial muscles. Charcot and numerous other clinical investigators indorsed this theory.

## VOLUME I.

When the editors first started THE LARYNGOSCOPE on its voyage of life, considerable doubt was expressed by some of their well-wishers as to whether it would be possible to fill its pages with interesting and instructive matter. It must be confessed that the editors themselves were a little dubious, at first, regarding the willingness of those who could write to give the production of their thought and experience to a new venture. After considerable correspondence it was found that enough able men had agreed to contribute to assure at least three original articles for each issue for a year; then they felt certain that the profession would support their undertaking. That their confidence that there was a field for such a publication was not misplaced is evidenced by the large number of subscriptions and by the encouraging letters received from every section and medical center.

THE LARYNGOSCOPE *has* occupied the field, and we trust that the profession at large will see that it is properly maintained. The editors respectfully invite the attention of all to the index of this, the first volume, and feel assured that an investigation will prove that no other American publication offers in one-half year the quality and quantity of substantial and profitable reading in the line intended to be covered.

## REPRINTS.

In the interests of the many able contributors to our original department, the editors of THE LARYNGOSCOPE desire to announce that a revised and reduced rate for reprints has just been arranged, a copy of which will be found on advertising page 2. These figures are the lowest possible, considering the class of work furnished.

The initial expenses of introducing THE LARYNGOSCOPE to the Medical profession as a thoroughly high-class journal have been so great, that we were unable to accommodate authors with reprints gratis.

We will, however, beginning with this issue, take pleasure in furnishing 250 reprints, without cover, gratis, whenever the request for same accompanies the manuscript.

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## LARYNGOTOMY WITHOUT IMPAIRMENT OF VOICE.

The following clinical report will be read with interest, as it pertains to a mooted question:

### LARYNGOTOMY (LARYNGO-FISSURE) WITHOUT IMPAIRMENT OF VOICE.

BY J. SOLIS COHEN, M. D.,

Professor of Diseases of the Throat (Emeritus) in Philadelphia Polyclinic; Professor of Laryngology (Honorary) in Jefferson Medical College.

The disputes between surgeons and laryngologists as to the permanent impairment of voice from division of the thyroid cartilage are of sufficient importance to justify the report of all cases in proof of the contrary.

On the 14th of February, 1896, I divided the thyroid cartilage of a child, three years of age, and removed a sliver of turkey bone the size of an adult thumb nail, which had been partially incarcerated for six weeks in the right ventricle. Recovery was prompt, and the patient was removed to her home, still hoarse, in two weeks.

On October 24th, she was brought for examination with a perfect voice and complete freedom of the larynx in swallowing, the advice given to move the integument occasionally having been sufficient to prevent adhesion of the wound in the integument to the wound in the larynx.

It was reported that the voice had become perfect within two months of the date of operation.

# SELECTIONS
# FROM CURRENT MEDICAL PUBLICATIONS.

## RHINOLOGICAL.

### Therapy in Acute Rhinitis.

Dr. H. J. Mulford (*Am. Medico-Surgical Bulletin*) states that he has been able to break up or cure a cold within twenty-four hours by prescribing podophyllin, $\frac{1}{10}$ gr., or calomel, $\frac{1}{5}$ gr., every hour for five hours, and powders or tablets containing lithium carbonate and sodium bicarbonate, to be taken in water every three hours. The author further says: "It is readily seen, after understanding acute rhinitis, why the classical treatment fails. Drugs that encourage a certain condition do not cure that condition; and a method which employs such drugs is irrational. We must conclude, therefore, that the classical treatment of acute rhinitis is irrational."

### Dobell's Solution.

Dr. Edw. Pynchon (*Annals of Ophthal. and Otology*) gives twenty different formulæ for this popular alkaline solution, and then adds his own as follows:

℞ Sodæ bicarb., Merck, C.P.,
Sodæ bibor., Squibb ..... āā ʒij.
Listerine ..... Oss.
Glycerine, C.P ..... Oiss.

First mix and triturate the two salts and place same in a one-gallon bottle, adding one-half of the glycerine; let stand twenty-four hours uncorked, with frequent agitations. Add remainder of glycerine, and let stand again uncorked, with frequent agitations, for twenty-four hours. Lastly add the listerine, and let stand for twenty-four hours, when it is ready for use. By the admixture of the glycerine with the salts a "foaming" is produced, which means a liberation of carbon dioxide and the production of a glycerole. Dilute one ounce of the mixture to one pint with water.

### Trikresoliodin in Rhinitis.

Dr. J. R. Stewart, resident surgeon Houston Infirmary, reports good results following the use of this new remedy in the treatment of the various forms of rhinitis.

### Advantage of Using Warm Solutions of Cocaine.

Costa has found that the local anesthetic effect obtained with cocaine is more rapid, more intense and more lasting if the solution is warm. The dangers of intoxication are thus much diminished, as the quantity of cocaine can be very much reduced if it is warmed. A solution of 0.5 or 0.4 per cent. heated will produce a powerful effect.—*Journal American Medical Association.—Medical Bulletin.*

S. S. B.

### Laryngeal Congestion of Nasal Origin.

M. Joal (*Revué Internat de Rhinol.*) writes that such cases may depend upon the following etiological conditions: 1. More or less complete obstruction of the nose. 2. Propagation of vaso-motor attacks beginning in the nose. 3. Reflex action consecutive to erection of the cavernous tissue. 4. Reduction of the respiratory capacity by nasal influence. 5. Functional incapacity of the nasal resonator. Nasal stenosis acts, especially in childhood, in subjects who sleep with the mouth open, and gives rise to laryngitis stridulus. Congestions by extension manifest themselves in arthritic subjects, and are preceded by a nasal fluxion as in beginning coryza. Of patients having congestive attacks of the larynx the author cites five cases in which the nasal origin was established. The hoarseness, the cough and hyperemia of the larynx supervened some minutes after the nasal symptoms. In some cases he was able to produce experimentally laryngeal fluxion by acting upon the terminations of the trigeminal and olfactory nerves. Finally, cocaine applied to the nose arrests the progress of the laryngeal symptoms. The nasal troubles may come either from direct irritation or an exterior and distant focus. Hypertrophic rhinitis favors the development of these reflex manifestations, but they may be occasioned by any gross alteration of the mucous membrane. Nasal obstructions diminish the respiratory capacity and obscure the vesicular murmur. Excessive muscular action is demanded, and the larynx is strained. Congestive attacks are produced, and these at length constitute a chronic catarrhal condition, with alteration of the voice and serious impairment of the singing voice. The second variety includes congestive attacks associated with an insufficiency of the nasal and naso-pharyngeal cavities considered as cham-

bers to secure resonance and strength of tones. In this class again the larynx is forced to over-exertion in order to overcome this impediment. The author cites two cases in singers who had almost lost their voice. The removal of small vegetations will free the naso-pharynx and restore the voice. The same effect follows resection of a spur, the straightening of a septum, ablation of a mucous polyp, and the treatment of a hypertrophic rhinitis or a dry rhino-pharyngitis.—*Medical Bulletin.* S. S. B.

**Heterophoria from Nasal Reflexes.**

Dr. H. Beckles Chandler (*Annals of Ophthal. and Otology*) calls attention, by the report of four cases, to the fact that muscular anomalies are often induced by enlarged turbinates. He says:

"There are certain peculiarities manifested in these hypertrophied or engorged turbinates; the pupils, as a rule, are dilated, reacting promptly to light, but again dilating, although a bright reflected light is thrown into the pupil. There seems to be a paresis of the third, or an over-stimulated sympathetic, so that examination, with or without atropia, shows but a small amount of lateral accommodation, and where a patient has used a plus 1.50D after treatment, is unable with comfort to overcome a .50D.

"The enlarged turbinate that seems to induce the most discomfort is the middle one, and contact with the septum, however slight, is sufficient to produce annoying and sometimes severe pains."

**Friction in Nasal Synechiæ,**

Dr. A. W. Watson (*Phila. Polyclinic*) reports good results after using friction in a case where adhesion would persist in forming between the septum and turbinal after a saw and then a galvano-cautery operation.

Dr. C. C. Rice, of New York, suggested this procedure after operation in an article before the New York Academy of Medicine, and stated that a smoother and more moist cicatrix resulted.

**Electrolysis of the Posterior Extremity of the Turbinates.**

Dr. Helot has made systematic use of electrolysis in the reduction of the hypertrophy of the posterior extremity of the turbinals, and he prefers this to the galvano-cautery and the cold snare (*Archiv. Int. de Laryng.*, March, April, 1896).

He uses a current of from 5 to 12 milliamperes for five to ten minutes. A strong steel needle is passed into each nostril and into the tumefied portion of the turbinate. There is no bleeding except at the

positive electrode. With soft tumors the results are rapid. Two applications, with intervals of eight days, are sufficient. For white and hard tumors three or four applications are necessary; or a single application may be made, and the operation finished with the cold snare without fear of hemorrhage. This method is not dangerous, and removes the fear of severe reaction and hemorrhage. W. S.

**Nasal Polypus in a Female Infant.**

Dr. A. Rupp (*Med. Record*, Nov. 14, 1896) mentions the rarity of the presence of such growths in children. This case was an infant four months old, who was brought to him because the little one was unable to nurse satisfactorily, and presented symptoms of difficult breathing. The father of the child stated that he heard something flap up and down in the left nostril. Examination revealed a pinkish pedunculated polypus, "large enough almost to occlude the left nasal vestibule." It was friable and attached high up. The removal was simple. No syphilitic or catarrhal history could be obtained. Good result followed the extirpation of the tumor. M. D. L.

**Papillary Fibroma of the Nose.**

Dr. E. T. Dickerman (*Annals of Ophthal. and Otology*) reports an interesting case of this trouble, and concludes a short, practical digest of the literature of the subject as follows:

"In a careful study of the cited cases, we find that true papilloma or papillary fibroma is a rare condition in the nose. It generally develops on the anterior portion of the septum from a small base, is slow in growth, and generally appears in middle life. This is contrary to the views of De Santi and others, who state that it is found generally in children. The growth does not ulcerate or cause infiltration at its base; there is an absence of glandular enlargement, and it can be classed as a benign growth in all respects.

**Dentigerous Cyst of the Superior Maxilla.**

Mr. Albert Lucas (*Birmingham Med. Review*, Sept., 1896): A small, hard lump appeared under the cheek, and above the first molar tooth, on the left side, of a young man twenty-one years old. It had existed about twelve months before he consulted the author. The swelling gradually increased in size, but was not painful except on severe exertion, when it throbbed. The left cheek was pushed forward. In the mouth there was a considerable swelling along the whole of the alveolar process to the canine tooth. The swelling was soft, and fluctuated posteriorly. No obstruction in nose or pharynx.

An incision was made under chloroform and about three ounces of glairy, clear-colored fluid escaped. The fluid contained much cholesterin. In the cyst cavity a tooth was found imbedded firmly in the bone. This was removed and the wound packed with gauze.

M. D. L.

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## LARYNGOLOGICAL.

### Effect of Drugs on the Secretion From the Tracheal Mucous Membrane.

The following is a summary of the author's work (James Calvert, *Jour. of Phys.*, 1896, XX., Nos. 2 and 3, pp. 157-164.):

1. Alkalies increase secretion.
2. Potassium iodide increases secretion.
3. Emetine markedly increases secretion.
4. Saponin in small doses does not increase secretion; in large doses it diminishes secretion.
5. Cold when applied to abdomen increases secretion.
6. Heat when applied to abdomen diminishes secretion.—*Am. Med. Surg. Bulletin.*

### The Nature and Treatment of Quinsy.

J. Homer Coulter (*Jour. Am. Med. Ass'n*, Nov. 7, 1896), in treating of quinsy, discredits the theory that the uric acid diathesis predisposes to attacks. He says: "In my cases rheumatism has not occurred more frequently than has the neurotic temperament, which condition I should hesitate to offer as an etiologic factor of any considerable importance." He believes that the only tenable theory of quinsy is that of a specific bacterium, not yet discovered, and defines the disease as an "acute inflammatory action in the peritonsillar areolar tissue, usually resulting in a suppurative process."

Dr. Coulter's treatment consists in a mercurial cathartic followed by a saline draught, hot gargles, poultices and lactophenin, ten grains every three hours. His reasons for preferring the latter remedy to salol are: "Its action is decidedly more prompt; it has thus far given me no undesirable after-effects; it not only relieves the pain, but reduces the fever with an equal certainty. In cases of evident rheumatic diathesis I should certainly employ in addition thereto my customary remedies."

S. S. B.

### A New Communication Upon Autoscopy of the Respiratory Passages—Examination of the Larynx and Trachea Without a Mirror.

Referring to the procedure of inspection of the larynx and of the trachea by direct vision, Dr. A. Kirstein proposes to perform autoscopy, not with the instrument which he at first described, but simply with a tongue spatula and an electric frontal mirror. (*Ann. des Maladies de l' Oreille, etc.*, August, 1896).

The author believes that if the tongue is an obstacle in some cases to the employment of this procedure, a little patience, and even a certain amount of diplomacy, will enable us to examine these parts without having recourse to cocaine. The technique of autoscopy, he states, is the art of pressing on the tongue with the spatula, without provoking reflexes, movements, or suffering, so as to form a gutter which extends as far as possible downwards, and in the direction corresponding with the line of the trachea.

The author believes that this procedure will entirely revolutionize laryngology. He is very enthusiastic over this method, which is, perhaps, not quite as easy to apply in daily practice as he would seem to believe. It appears to us in some cases, to be painful, difficult of application, and in some cases absolutely intolerable. W. S.

### Etiology of Peritonsillar Abscess.

Dr. Logneki (*Med. Record*, Nov. 14, 1896), the author, recognizes two forms of abscess in this region. In one, the collection of pus is found between the gland and the anterior pillar. The latter appears prominent on inspection. There is also a bulging of the surrounding tissues and œdema of the uvula. In the other variety, the abscess is found between the tonsil and the posterior pillar. This form gives rise to more disturbance and is more prolonged. Streptococci were found in the early stage of the disease, and staphylococci presented themselves at a later period. These organisms are present in the crypts of the gland in healthy persons, and cause suppuration if an attack of tonsillitis sets in. Adhesives between the pillars and the gland take place, and the foreign material, not finding its way out through the crypts, sets up an irritation in the peritonsillar tissue, causing an inflammation and infection. M. D. L.

### Simple Acute Laryngitis and Bronchitis.

Dr. Hubbard thus summarizes the principles of treatment of simple acute laryngitis and bronchitis:

The author's idea of treatment is embodied in the old English med-

ical aphorism: "Never give stimulating expectorants until the skin is moist and the phlegm loose; it will do no good. You must give ipecac and relaxant expectorants as long as the skin is dry and the phlegm tough."

Dr. Hubbard regards the present use of stimulating expectorants, fortified by sedatives, as indiscreet and irrational. He prefers apomorphine, freshly compounded in acidulated mixture. He finds it the best of all relaxing expectorants. In $\frac{1}{30}$ gr. doses at two or three hour intervals it rarely fails to cause a free sero-mucous flow in twelve to thirty-six hours. The best sedative is sulphate of codeine in $\frac{1}{6}$ gr. doses.

Apomorphine in acidulated mixture rarely causes nausea in the doses mentioned, and in fact seems rather to aid digestion and increase the appetite for a limited period. It is slightly laxative. It can be given for many days in doses gradually decreasing as the expectoration becomes more free. Since using this remedy Hubbard has found less and less use for stimulating expectorants and sedatives. The apomorphine should be administered as long as improvement is decided. A sero-mucous bronchial secretion is coughed out very easily. Only in debilitated subjects, or where there is a broncho-pneumonia, has he found it necessary to supplement this treatment with stimulating expectorants. Of these he regards the carbonate of ammonium as the best, administered in a mucilaginous vehicle or as the fresh aromatic spirits.—*N. Y. Med. Jour.; Am. M.-S. Bulletin.*

### Mycosis Pharyngis, Leptothricia and Keratosis Pharyngis.

Ten cases are reported (A. B. Kelly, B.Sc., M.B., *Glasgow Med. Journal*, Oct. 1896). Pharyngeal irritation, with at times annoying cough, existed. In one of the cases a 1 to 1,000 bichloride of mercury solution seemed to have a controlling effect, but after the solution was omitted, the mycotic areas disappeared without further medication. The galvano-cautery seemed to prevent the return of the deposits in another case. M. D. L.

### A Case of Hemorrhagic Laryngitis of Grippe Origin.

Dr. Compaired reports the case of a young girl of eighteen years, who was a domestic in a family, other members of which had already suffered from grippe. (*Revue Hebdomadaire de Laryngologie, d' Otologie et de Rhinologie*, October, 1896).

When the author made his examination of the patient, she had a copious hemoptysis with a cough, respiratory oppression, and a pricking sensation in the region of the larynx. The whole of the laryngeal mucosa was congested; the hemorrhagic points were confluent, and

large vascular arborisations could be distinctly seen on its surface; the cords moved with difficulty on account of the congested and semi-edematous condition of the mucosa. The hemorrhages recurred during the twelve following days.

In conclusion, Dr. Compaired reviews the literature of grippal complications of the larynx, and the affections which give rise to laryngeal hemorrhage.

### Foreign Body in Pharynx of Child.

R. C. McCullogh reports a case (*Brit. Med. Jour.*) where cough and difficulty in breathing were noticed by the mother of a child one year old. She thought the baby was suffering from croup. On examining the pharynx, the reporter observed the upper portion of a one and one-half inch brass safety pin lying at the root of the tongue; the remaining portion was over the larynx, grasped by the œsophagus. The pin was open, and its point was caught in the left side of the fauces. After inverting the pin it was readily removed with an artery forceps, without much laceration of the adjoining tissues. The author believes that the pin being open prevented it from being swallowed.

M. D. L.

### Thyrotomy for Laryngeal Warts.

Two children, aged respectively three and eight years, upon whom this operation was performed, were shown before the Liverpool Medical Institution, October 22d, 1896 (P. M. Murray, *The Lancet*). Before the operation both children spoke in a whisper. After the growths were removed the voice was strong, but husky. At the same meeting Dr. Hunt and Mr. Paul mentioned two cases in which thyrotomy was done for epithelioma and papilloma of the vocal cord, with good results. A Hahn's canula was employed. (For the removal of papilloma from the larynx, a spray of alcohol has been recommended as an efficacious application. M. D. L.)

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## OTOLOGICAL.

### Normal Middle Ear and Microbes.

Dr. Lannois has made a number of experiments on dogs and rabbits, in order to determine the presence or absence of microbes in the normal middle ear. (*Revue Internationale d'Rhin. d'Otol. et de Laryng.*, July, 1896.)

The brain and the superior wall of the tympanum were removed and cultures made of the mucus of the middle ear in ordinary bouillon, but the results were negative. The middle ear is, therefore, a closed antiseptic cavity. This condition is explained by the bactericidal power of the mucus. This property, which was found to be the case in the nasal mucus by Wurtz and Lemoyez, is also possessed by the mucus found in the tympanum. W. S.

**Lactic Otitis in the New-Born.**

Dr. Martha reports the following case: A child of four months, vigorous, apyretic, and without adenoid vegetations, was found to have in both ears an accumulation of transparent pus, with a strong odor (*Progres Medical; Revue Internat. de Rhin., Otol. and Laryng.*, July, 1896). The mucous membrane of the canal was macerated and glazed; the tympanic membranes were normal. The accumulations disappeared after the ears had been syringed with an antiseptic solution.

A close observation of the infant developed the fact that after regurgitation, milk ran from the mouth as far as the concha of the ear and into the interior of the canal. A bacteriological examination of the pus did not give any further information. This external lactic otitis is frequently caused by nurses, who introduce drops of milk into the ears of the infants to alleviate inflammation. W. S.

**Observations on a Case of Fungous Otitis with Grave Symptoms of Labyrinthal Compression and Threatening Meningitis.**

Dr. Jacquemart reports a case of chronic otitis with fungosities which recurred after each removal, and which produced symptoms of labyrinthal compression; the granulation developed rapidly and did not disappear until the mucous membrane of the tympanum had been thoroughly curretted. (*Revue Internationale de Rhin. d' Otol. et de Laryng.*, July, 1896.) W. S.

**Aura of Auricular Vertigo.**

Dr. Gellé (*Annals des Mal. de l' Oreille, etc.*, translation in *Annals of Ophth. and Otol.*,) thus concludes his article:

"The picture of sensorial phenomena, sensitive or motor, premonitory to the access of auricular vertigo, shows us clearly that the irritation of the auditory nerve produces in man not only the diverse perturbations of equilibrium and movement that the experimentor studies in the laboratory, and which are so well known, but that, moreover, they act upon the psychic centers, provoking the appearance of veritable hallucination of the senses and movements that only clinical observation can teach us."

**Temporo-Sphenoidal Abscess Secondary to Acute Left-Sided Suppurative Otitis Media, etc.**

Six months after an attack of influenza, the patient, a male, 48 years of age, became affected by a constant pulsating tinnitus, and a marked degree of deafness (W. Milligan, Manchester, *Archives of Otology*, No. 3, 1896). This lasted for three months, when the patient came under the care of the author. Severe pain in and around the ear was constantly present, and very severe. Movement of the head aggravated this symptom. His mental condition was apathetic, and cerebration was slow and sluggish. Sensory and motor aphasia, extreme ptosis, and the left pupil dilated, were indicative manifestations existing. The left optic disc was swollen, and its edges were puffy. Left facial paralysis was observed, but no paresis of arm or leg. A small perforation of the postero-superior segment of the membrane could be seen. Aerial conduction was negative, but bone-conduction was good. The temperature was 98.0° F.; pulse, 66. Operation was advised, but did not take place, till two days later. During the preceding day there had been incontinence of urine and fæces. An opening three-fourths of an inch was made with the trephine, with its centre one-and-one-half inches above and one-and-one-half inches behind the middle of the external auditory meatus. The brain was found bulging, but pulsation was absent. An opening was made into the dura mater, and a pointed director was thrust into the substance of the temporo-sphenoidal lobe downwards and forwards. After entering the brain-substance for about three-fourths of an inch pus was liberated. The sinus was somewhat enlarged, and about four drachms of pus was evacuated. Warm carbolic solution (1 in 60) was employed to irrigate. A soft-rubber drainage-tube was inserted. Temperature fell from 101° F. to 97.8° F., and the pulse from 108 to 82. Improvement was noticed for the first four days, but temperature was somewhat abnormal, and pulse ranged from 90 to 100. Six days after the trephine operation the mastoid antrum was opened and drained. Little pus was found at this location, but the mucous membrane lining the antrum and mastoid cells was intensely congested.

The patient was able to move about the ward in a short time, until a hernia cerebri appeared, which increased very rapidly. Temperature arose to 103° F., and the cerebral wound was probed, but no pus found. Symptoms of basal meningitis appeared, and patient died. Autopsy revealed the abscess cavity empty and shrunken. Diffuse basal leptomeningitis of recent origin existed. No erosion of the roof or parietes of the middle ear was found. The infection was evidently through the lymphatics or venous system. M. D. L.

**Foreign Bodies in the Ear.**

Preotraschensky (*Glasgow Med. Jour.*, November, 1896), after calling attention to the unpleasant and, at times, serious complications which follow unskillful attempts at removal of foreign substances from the external auditory canal, the author offers the following suggestions:

1. An unskilled person should never attempt the instrumental extraction of a foreign body.

2. Foreign bodies reach the middle ear almost solely as the result of clumsy attempts at removal.

3. The foreign body usually does less harm to the ear than its extraction by an unpracticed hand.

4. The changes produced by the presence of a foreign body in the ear cannot be estimated by the length of time during which it has remained there.

5. The injection of warm water is an infallible (?) means of securing the evacuation of any foreign body from the ear; irrigation with alcohol may be further necessary to prevent swelling of the intruder.

6. There is no indication to expedite the removal of foreign bodies which are giving rise to no troublesome symptoms.

7. In inflammatory processes caused by necrosis from unskilled attempts at extraction, expectant treatment suffices as long as no dangerous symptoms are present. Turpentine and ether for larvæ; these oils cause inflammatory conditions, so we had better resort to instrumental means. (When the foreign element proves to be of the vegetable kingdom, water had better be omitted from the methods suggested, as such a substance readily absorbs moisture, and so increases in size, making its extraction even more difficult than before M. D. L.).

**Pure Word Deafness.**

Hélot, Houdeville and Halipré (*Revue Neurologique*) report the history of a patient who suffered for a long time from middle ear disease, and observed that alcoholic excesses caused a permanent impairment of his understanding of spoken words. After drinking one day more than usual he fell into a state of coma; on regaining consciousness he was unable to understand what was said to him.

All other parts of speech were intact. He could speak, write, read, reply to written questions, write spontaneously, and copy. He said repeatedly: "I know that you are speaking, but I do not understand; I can count the syllables, but I do not grasp the meaning."

He understood, however, a few words, and could write them on dictation. Musical deafness was almost complete.

As the word-concept was intact it was necessary to believe that the cortical center for word hearing was uninjured, and that the lesion was subcortical. Ordinary hearing was not affected.—*International Medical Magazine.* S. S. B.

**Notes on the Electrical Variations Generated in the Acoustic Nerve by Sound.**

Drs. H. Beauregard and E. Duprey state that the object of these experiments was to determine the limits of auditory sensation in animals. (*Bulletin de la Societe de Biologie*, 1896.) They employed for this purpose the galvanometer of D'Arsonval with a micro-metric scale, which permits very feeble currents to be recognized. These experiments were made in frogs.

The acoustic nerve having been exposed, it was divided and an electrode applied to the section and another to the tympanum. The electrodes were attached by a thread of copper to the galvanometer. The section of the nerve gave rise to a perceptible current, which was accentuated by the action of noises when these were made near to the nerve. Shrill noises had more effect than grave ones. These experiments were verified in other animals. W. S.

**Connection Between the Cortex and the Labyrinth.**

Ewald (*Deutsche Med. Woch.*) has found by experiments on dogs that the auditory nerve performs more than the mere auditory function, and therefore suggests that this name is misleading, and that it would be better to call it nervus octavus instead. He states that if the labyrinth is destroyed in a dog the animal loses the coördination of its movements, is unable to stand up, to walk, etc., but in the course of a few weeks these disturbances pass away, and the missing functions seem to be fully compensated in some way. The same phenomena occur if the other labyrinth is also destroyed; in time the animal learns to move as usual, even to run and jump. Similar results are produced by destroying on one side only the "excitable zone" in the cerebrum for the movements of the fore and hind legs; the dog learns in time to run and jump as nimbly as ever, even in the dark. But if later the remaining half of the "excitable zone" is also removed, then intensely severe and permanent disturbances follow. The animal can neither stand nor walk; he can not lie down on his breast or belly, only on his side, and in spite of the most strenuous efforts, he can not get up on his feet. He is still able to move his head, and uses it to propel himself. He gradually learns in time to use his extremities by purely reflex action, but is unable to make a single voluntary movement, and even the reflex movements are impossible in the dark. He loses

control of his movements completely if taken into a dark room, and tumbles helpless to the floor; but after the room is lighted he regains control of his movements and is able to move as before. Ewald considers that this throws a new light upon the connection between the sight and the locomotor function. The proof of the extra functions of the nervus acousticus is therefore the diminished muscle power in the animal after the nerve is severed; also the lack of precision in its movements; also the lack of muscle sense, shown by the vertigo. The influence of the auditory nerve on the striated musculature is explained by the presence of the ciliated cells in the labyrinth, which produce uninterrupted excitation of the central nervous system. As the severed auditory nerve does not grow again, the explanation of the disappearance of the disturbances must be that its functions are substituted by other organs. The sense of touch substitutes the function of the labyrinth, as is evidenced by the fact that the coördinating power is not totally abolished until the entire "excitable zone" in the cerebral cortex is removed. The "excitable zone" and the labyrinth are able to substitute each other, and the same is true of the muscle sense and the sense of touch. This explains the comparatively slight motor disturbances in persons with injured labyrinths.—*Jour. Am. Med. Assoc.* S. S. B.

## NEWS ITEMS.

### The British Laryngological, Rhinological and Otological Association.

The following gentlemen have been elected office-bearers for the ensuing year: President, Dr. Wm. Milligan, Manchester. Vice-Presidents: Dr. J. Middlemass Hunt, Liverpool; Mr. F. Marsh, Birmingham; Mr. G. C. Wilkin, London. Council: Mr. George Stoker, *ex-officio;* Dr. Dundas Grant, Mr. Mayo Collier, Mr. Wyatt Wingrave, Dr. Hemington Pegler. Metropolitan: Dr. James Davidson, Bournemouth; Dr. A. Bronner, Bradford, Extra-Metropolitan. Treasurer: Dr. Wm. McN. Whistler. Hon. Secretaries: Mr. R. Lake, Mr. St. George Reid.—*Medical Bulletin.*

### Chicago Post-Graduate School.

The new school and hospital building of the Post-Graduate Medical School of Chicago was dedicated on Saturday, Nov. 7th. Professor Theodor Edwin Klebs delivered the dedication address in the evening, after which the guests inspected the elegant building and refreshments were served.

A special course in diseases of the eye, ear, nose and throat was inaugurated on the 10th inst. by an illustrated evening lecture on "Mastoid Diseases and Operations," by Professor S. S. Bishop.

### West Side Post-Graduate School and Polyclinic.

A new school for practitioners of medicine was opened in Chicago last October in the building formerly occupied by the Post-Graduate School. The name of the new candidate for professional patronage is: "The West Side Post-Graduate School and Polyclinic." It is an outgrowth of the old Post-Graduate School, from which the nucleus of its facully was obtained. The directors have expended about $13,000 in improvements on the old building, and now Chicago is blessed with three post-graduate schools, having first-class hospital and teaching facilities.

### Antitoxin Collective Investigation (Second), American Pediatric Society.

The American Pediatric Society is encouraged to ask the coöperation of physicians in a further collective investigation. Laryngeal diphtheria is believed to furnish a crucial test for antitoxin. The present aim is to ascertain: (1) What percentage of cases of laryngeal diphtheria recover without operation under antitoxin treatment? (2) What precentage of operated cases recover?

The society asks the record of cases of diphtheria involving the larynx, whether operated or not, occurring in private practice in the United States and Canada treated with antitoxin. It is expected that the cases occurring this year will be treated with reliable preparations of the serum, will be treated early, and will be given efficient doses. The second report is designed to be a study of cases occurring between the closing of the first report, May 1, 1896, and the closing of the present collective investigation, April 1, 1897.

In order to secure data which shall make the tables complete, circulars containing blanks for ten cases have been printed and are now ready for distribution. It is desired that physicians shall fill out circulars, blanks, as cases occur, not trusting to memory, and shall urge their friends having similar cases to do the same. Circulars can be had by applying to the committee (address below). Several groups of cases in the first investigation arrived too late and were lost to the report. It is desired that circulars as soon as filled (ten cases) be returned to the committee. The collection of cases must close at the end of March, 1897.

For extra circulars (blanks) for returning circulars (filled) and for further information, address the chairman of the committee,

W. P. NORTHRUP, M.D.,
57 East 79th street, New York, N. Y.

**Western Ophthalmological, Otological, Laryngological and Rhinological Association.**

The next meeting of this society will take place in St. Louis on the second Thursday and Friday of April, 1897. Programme of meeting will be ready February 1st next. Members intending to read papers should at once notify the secretary, Dr. Hal Foster, Kansas City, Mo., giving subject so that same can appear in the programme. Railroads will grant one-and-one-third fair on the usual certificate plan.

## NEW INSTRUMENTS.

**Eustachian Canula.**

Dr. Jos. E. Willett (*Annals Ophthal. and Otol.*) describes an Eustachian canula devised by him for use in the treatment of otitis media catarrhalis chronica. The change from the ordinary instrument consists of dividing the canula into two parts and providing an outlet for the return canula of the tube. A continuous vapor current can be maintained. The instrument is not changed in size or shape from the ordinary.

## BOOK REVIEWS.

**Diagnostic Urinalysis.** By M. D. Hodge, Jr., M.D., Professor of Histology, Pathology and Urinology, University College of Medicine, Richmond, Va. Pp. 87. Wide margins; leather bound. Published by George M. West, Richmond, Va. Price, $1.00.

The subject matter of this excellent little volume was recently published in consecutive numbers of the *Virginia Medical Semi-Monthly*, and the author was the recipient of many complimentary remarks as to the excellence of material and arrangement which the papers presented. Much careful and systematic work is indicated. The volume includes in its 87 pages concise directions for all the tests employed in a complete urinary analysis, and is thoroughly practical and up to date.

**Transactions of the Louisiana State Medical Society for 1896.**

The neatly bound copy of the Transactions of the Louisiana State Medical Society for 1896 has just been issued. The book is well edited, and has been issued with a promptness which should be an excellent precedent for future editions. Of interest to our specialty are the following original communications:

"Sarcoma of the Superior Maxilla Removed; Replaced by Artificial Apparatus," by Dr. E. D. Martin, New Orleans; "The Importance of Making a Careful Examination of the Ear, Nose and Throat from a Medico-legal Standpoint," by Dr. W. Scheppegrell, New Orleans; "The Pathology and Treatment of Deviations and Spurs of the Nasal Septum in Young Children," by Dr. E. J. Moure, Bordeaux, France; "The Influence of Diseases of the Nose and Accessory Cavities on the General Health," by Dr. O. Joachim, New Orleans; "Toxitherapy and Serotherapy of Malignant Tumors," by Dr. S. P. Delaup, New Orleans; "The Roentgen Method of Photography," by Dr. W. Scheppegrell, New Orleans; "Fracture of the Zygomatic Arch; A Simple Method of Reduction and Fixation, with Remarks on the Prevalence, Symptomatology and Treatment of this Fracture," by Dr. Rudolph Matas, New Orleans. W. S.

## BOOKS AND PAMPHLETS RECEIVED.

Deviation of the Cartilaginous Nasal Septum; Its Cure. By Emil Mayer, M.D. Reprint, *N. Y. Med. Jour.*, Dec. 14th, 1895.

Cerebral Diseases Following Middle Ear Suppuration. By M. D. Lederman, M.D. Reprint, *Jour. of the Am. Med. Assoc.*, Sept. 12, 1896.

Acetanilide as an Antiseptic in Chronic Suppurative Otitis. By Lewis S. Somers, M.D. Reprint, *Medical News*, April 4, 1896.

Nasal Syphilis with Extensive Lesions. By Lewis S. Somers, M.D. Reprint, *Medical and Surgical Reporter*, April 25, 1896.

Membranous Rhinitis. By Lewis S. Somers, M.D. Reprint, *Univ. Med. Mag.*, August, 1896.

Quinsy: The Differential Diagnosis and Treatment. By J. Homer Coulter, M.D. Reprint, *Jour. of the Am. Med. Assoc.*

Some of the Effects of Chronic Nasal Obstruction. By Charles N. Cox, M.D. Reprint, *Brooklyn Med. Journal.*

The Treatment of Tuberculosis and Other Infectious Diseases with Oxytoxines. A Provisional Report. By J. O. Hirschfelder, M.D., Professor of Clinical Medicine, Cooper Medical College, San Francisco, Cal.

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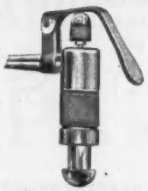

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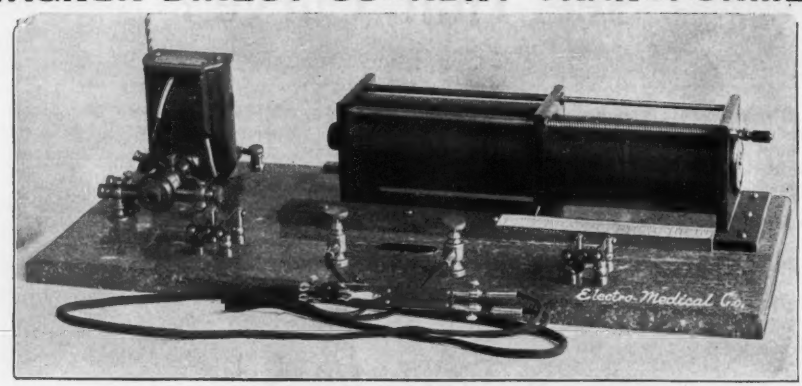


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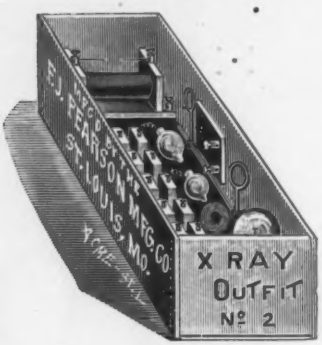


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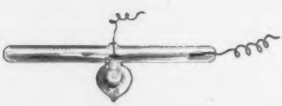

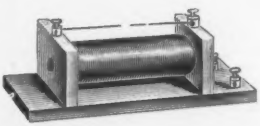

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Extract from page 153:
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